

073206T4CHE

CHEMICAL ENGINEERING LEVEL 6

ENG/OS/CE/CR/02/6/A

Perform Process Quality Control

Nov/Dec 2024



**TVET CURRICULUM DEVELOPMENT, ASSESSMENT AND CERTIFICATION
COUNCIL (TVET CDACC)**

PRACTICE

OBSERVATION LIST

INSTRUCTIONS TO THE ASSESSOR

1. *Assess the candidate as the practical progresses observing the critical areas*
2. *You are required to mark the practical as the candidate perform the tasks*
3. *You are required to take video clips at critical points*
4. *Ensure the candidate has a name tag and registration code at the back and front*

This guide consists of SEVEN (7) printed pages.

**Assessor should check the guide to ascertain that all the pages are printed as indicated and
that no questions or answers are missing**

Candidate's Name & Registration Code			
Assessors Name & Registration Code			
Venue of Assessment			
Date of Assessment			
Items to be Evaluated: <i>Please award marks as appropriate. Give a brief comment on your observation.</i>	Marks Available	Marks Obtained	Comments
1. Wore Personal Protective Equipment • Dustcoat • Leather gloves • Dust mask • Safety goggles • Safety shoes <i>(Award 1 mark for each task completed correctly, 0 marks for incomplete tasks 5 marks)</i>	5		
Sub-Total 1	5		
TASK 1: Determined the acid value of the given oil sample.			
2. Prepared the reagents - Dissolved 2 g of Phenolphthalein into 100 ml of Ethanol - Mixed well by shaking - Dissolved 0.44 g of NaOH pellets in 90 ml of distilled water - Allowed it to cool it to room temperature - Topped it up to 100 ml with distilled water <i>(Award 1 mark for each task completed correctly, 0 marks for incomplete task, max 5 marks)</i>	5		

3. Prepared the sample - Weighted 20 g of oil into a 250 ml conical flask - Measured 50 ml ethanol into 150 ml conical flask - Added 2-3 drops of phenolphthalein indicator to the flask containing ethanol - Added drops of 0.1 N NaOH to the flask containing ethanol until the light pink colour solution was formed - Boiled the mixture by placing the flask on hot plate until the sample dissolves completely - Shook the flask periodically to facilitate the rapid dissolving of the sample in ethanol <i>(Award 1 mark for each task completed correctly, 0 marks for incomplete task, max 6 marks)</i>	6		
4. Titrated the prepared sample - Filled the burette with 0.1 N NaOH - Noted the initial burette reading - Added 2-3 drops of phenolphthalein indicator to the prepared oil sample - Titrated the prepared oil sample with constant swirling using NaOH - Stopped the titration when the solution colour changed to light pink - Noted the final burette reading	6		

(Award 1 mark for each task completed correctly, 0 marks for incomplete task, max 6 marks)			
5. Calculated the acid value using equation 1 a) Substituted values into equation 1 correctly b) Computed the value of the expression and noted down the value (Award 1 mark for each correct working step, max 2 marks)	2		
Sub-Total 2	19		
Task 2: Determined percentage of insoluble impurities in the oil sample			
TASK 2: Determined the percentage of impurities in the oil sample			
6. Prepared filter paper a) Folded the filter paper, placed it in a glass dish and covered it with a fitting lid b) Dried the filter paper in the oven at 103 °C for 20 mins c) Took out the filter paper from the oven and cooled in a desiccator for 10 mins d) Weighed the blank filter paper with glass dish and lid and noted down the mass (Award 1 mark for each task completed correctly, max 2 marks)	4		
7. Prepared the sample a) Shook the oil sample to make it homogenous	6		

b) Weighed 20 g of oil sample into a conical flask c) Added 200 ml of n-hexane to the flask containing the test portion d) Stoppered the flask and shook it to mix the contents well e) Allowed the flask to stand for 30 minutes <i>(Award 1 mark for each task completed correctly, 0 marks for incomplete task, max 6 marks)</i>			
8. Filtered the sample solution a) Shook the flask containing the sample vigorously to mix the contents well b) Filtered the sample solution using filter paper dried previously c) Washed the residual contents of the sample flask with n-hexane into the filter paper d) Warmed n-hexane to 60 °C and used it to wash any oil residue on the filter paper e) Ensured no oil residue is left on the filter paper except the impurities f) Removed the filter paper from the funnel and placed it in the glass dish g) Covered the dish with a lid <i>(Award 1 mark for each task completed correctly, 0 marks for incomplete task, max 7 marks)</i>	7		
9. Dried the filter paper	3		

a) Dried the filter paper in hot air oven at 103 °C for 20 minutes b) Took out the filter paper containing the impurities from the oven and cooled it in the desiccator for 10 minutes c) Weighed the filter paper containing impurities with glass dish and lid <i>(Award 1 mark for each task completed correctly, 0 marks for incomplete task, max 3 marks)</i>			
10. Calculated for insoluble impurities using equation 2 a) Substituted values into equation 2 correctly b) Computed the value of the expre and noted down the value <i>(Award 1 mark for each task complet correctly, max 2 marks)</i>	2		
Sub-Total 3	22		
GRAND TOTAL	46		
ASSESSMENT OUTCOME			
The candidate was found to be: Competent ☐ Not yet Competent ☐ <i>(Please tick as appropriate)</i> <i>(The candidate is competent if the candidate obtains at least 50%)</i>			
Feedback from the Candidate: 			

Feedback to the Candidate:	
Candidate Signature _____	Date: _____
Assessor's Signature _____	Date _____

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